

WHAT IS CLAIMED IS:

1. A method for aiding the diagnosis of, or screening for the risk of, a neurodegenerative disease in a subject, comprising the steps of

(a) providing a quantity of lymphoblasts from a subject to be evaluated;
 (b) measuring acidification rate of the lymphoblasts, in the presence or absence of one or more compounds selected from the group consisting of an inhibitor of the mitochondrial electron transport chain and a calcium ionophore; and

(c) determining the presence of a pattern of responses in the stimulation of the acidification rate to a set of said compounds, that corresponds to a neurodegenerative disease.

2. The method of claim 1, wherein the acidification rate is measured with a microphysiometer.

3. The methods of claim 1 or 2, wherein the neurodegenerative disease is Alzheimer's disease having the pattern of responses comprising a defective response in the stimulation of the acidification rate in the presence of complex I inhibitor, a normal response in the acidification rate in the presence of complex II inhibitor, a defective response in the stimulation of the acidification rate in the presence of complex III inhibitor, and a normal response in the acidification rate in the presence of complex IV inhibitor.

4. The methods of claims 1 or 2, wherein the neurodegenerative disease is Huntington's disease having the pattern of response comprising a defective response in acidification rate in the presence of a calcium ionophore.

5. The methods of claims 1 or 2, wherein the neurodegenerative disease is Leber's Hereditary Optic Neuropathy (LHON) having the pattern of responses comprising a defective response in acidification rate in the presence of complex I inhibitor, a normal response in acidification rate in the presence of complex II inhibitor, a defective response in the acidification rate in the presence of complex III inhibitor, a defective response in the acidification rate in the presence of complex IV inhibitor, and a defective response in the acidification rate in the presence of a calcium ionophore.

6. The methods of claims 1 or 2, wherein the neurodegenerative disease is Parkinson's disease having the pattern of responses comprising a defective response in acidification rate in the presence of complex I inhibitor.

7. A compound suitable for the treatment of a neurodegenerative disease, wherein the
5 compound substantially reverses the defective effect of one or more inhibitors of the mitochondrial electron transport chain on the acidification rate, as measured by the method of claim 1.

8. A compound suitable for the treatment of a neurodegenerative disease, wherein the compound substantially reverses the defective effect of a calcium ionophore on the
10 acidification rate, as measured by the method of claim 1.

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